
VBOX-3100

In-Vehicle Computing

User's Manual

Version 1.1

Document Name		VBOX-3100 User Manual		Document No.	UM2012310010
Version		1.1		Date	Oct 24, 2012
Reversion History :					
Reversion		Date	Notes	Author(s)	
From	To				
1.0		Feb 17, 2012	Initial document issued	Stanley Chou	
1.0	1.1	Oct 24, 2012	GPIO & Delay Time Setting	Stanley Chou	

SINTRONES® Technology Corp.

User Manual

Copyright

©2009 by SINTRONES® Technology Corp. All Rights Reserved.

No part of this publication may be reproduced, transcribed, stored in a retrieval system, translated into any language, or transmitted in any form or by any means such as electronic, mechanical, magnetic, optical, chemical, photocopy, manual, or otherwise, without prior written permission from SINTRONES® Technology Corp.

Other brands and product names used herein are for identification purposes only and may be trademarks of their respective owners.

Disclaimer

SINTRONES® Technology Corp. shall not be liable for any incidental or consequential damages resulting from the performance or use of this product.

SINTRONES® Technology Corp. makes no representation or warranty regarding the content of this manual. Information in this manual had been carefully checked for accuracy; however, no guarantee is given as to the correctness of the contents. For continuing product improvement, SINTRONES® Technology Corp. reserves the right to revise the manual or make changes to the specifications of this product at any time without notice and obligation to any person or entity regarding such change. The information contained in this manual is provided for general use by customers.

This device complies to Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must withstand any background interference including those that may cause undesired operation.

Safety Information

Read the following precautions before setting up a SINTRONES Product.

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

CAUTION

Incorrectly replacing the battery may damage this computer. Replace only with the same or its equivalent as recommended by SINTRONES® Technology Corp. Dispose used battery according to the manufacturer's instructions.

Table of contents

(1) Introduction

1.1	Model Specifications	7
1.2	VBOX-3100 Illustration (Mainboard, System)	9
1.3	Block Diagram	11
1.4	Jumper List	12
1.5	Connector List	12
1.6	Rear Panel Connector List	13

(2) Jumper Setting

2.1	CLRCMOS1 Clear CMOS Selection	14
2.2	JP2 Digital Input / Output Voltage Select	14
2.3	JP3 PC104 +VIO Voltage Select	14
2.4	JP4 COM1,2 Port Signal / Power Selection	14
2.5	JP5 COM3,4 Port Signal / Power Selection	15
2.6	JP6 WDT Enable Selection	15
2.7	JP8 Backlight Enable Selection	15

(3) Connector Pin Assignment

3.1	DC_IN1 +12V Power Input Connector	16
3.2	PNV_VGA1 Pineview VGA BOX HEADER	16
3.3	LPC1 LPC Debug Port Connector	16
3.4	COM3 RS-232 Port B Wafer	17
3.5	COM4 RS-232 Port B Wafer	17
3.6	COM5 TTL LEVEL UART Port	17
3.7	DIO1 Digital Input / Output Connector	18
3.8	LVDS1 LVDS Panel Connector	18
3.9	SATA1_PWR1 SATA Power Connector	18
3.10	SATA2: SATA Connector	19
3.11	MPCIE1 Mini PCIE slots	19
3.12	MPCIE2 Mini PCIE slots	20
3.13	MPCIE3 Mini PCIE slots (3G Module only available on this slot)	21
3.14	SMBUS1 SMBUS Box Connector	21
3.15	FAN1 FAN Wafer	22
3.16	DDR3_1 DDR3 Memory SO-DIMM Socket	22

3.17	USB3 USB2.0 Port 4,5 Pin Header	22
3.18	BAT1 BATTERY Connector	22
3.19	AUDIO_FP1 Front Panel Audio Pin Header	23
3.20	J1 PC104+ Extension Wafer	23
3.21	SATA1 Serial ATA & HDD Power Connector	24

(4) Rear Panel Pin Assignments

4.1	PWRBTN1 Push button on front I/O for power on/off	25
4.2	LED2 WLAN1&3 LED	25
4.3	LED1 WLAN2 & HDD LED	25
4.4	HDMI1 HDMI Connector	26
4.5	SIM1 Card Reader	26
4.6	LAN1 10/100/1000 Ethernet RJ-45 Connector	26
4.7	LAN2 10/100/1000 Ethernet RJ-45 Connector	27
4.8	USB2 USB2.0 Port 2 , 3 Type A Connector	27
4.9	USB1 USB2.0 Port 0 , 1 Type A Connector	27
4.10	AUDIO1 2-Port Audio phone jack	27
4.11	GT218_VGA1 GT218_VGA Connector1	28
4.12	D-SUB 15P DIP 90D CONNECTOR [LTW LTWHDB-15PFFP-SB8001]	28
4.13	GT218_VGA2 GT218_VGA Connector2	28
4.14	OM1 RS-232 Port A DB-9 Connector	29
4.15	COM2 RS-232 Port A DB-9 Connector	29

(5) System Installation

5.1	System Introduction	30
5.2	Opening Chassis	31
5.3	Installing Memory	32
5.4	Installing MINI PCIe Expansion Card (PCIe 1)	34
5.5	Installing MINI PCIe Expansion Card (PCIe 2, Wifi Module)	35
5.6	Installing MINI PCIe Expansion Card (PCIe 3, 3G Module only)	36
5.7	Installing Internal Antenna Cable	37
5.8	Installing SIM Card	39
5.9	Installing CF Card	40
5.10	Installing HDD	41

(6) System Resources

6.1	Ignition Power Management Quick Guide	43
6.2	GPIO & Delay Time Setting	45
6.3	Gobi2000 WWAN Module Applicatino Note	46
6.4	Gobi2000 GPS Module Application Note	50

(7) BIOS

7.1	Super IO Configuration	55
-----	------------------------	----

(8) Packing List

8.1	Packing List	57
-----	--------------	----



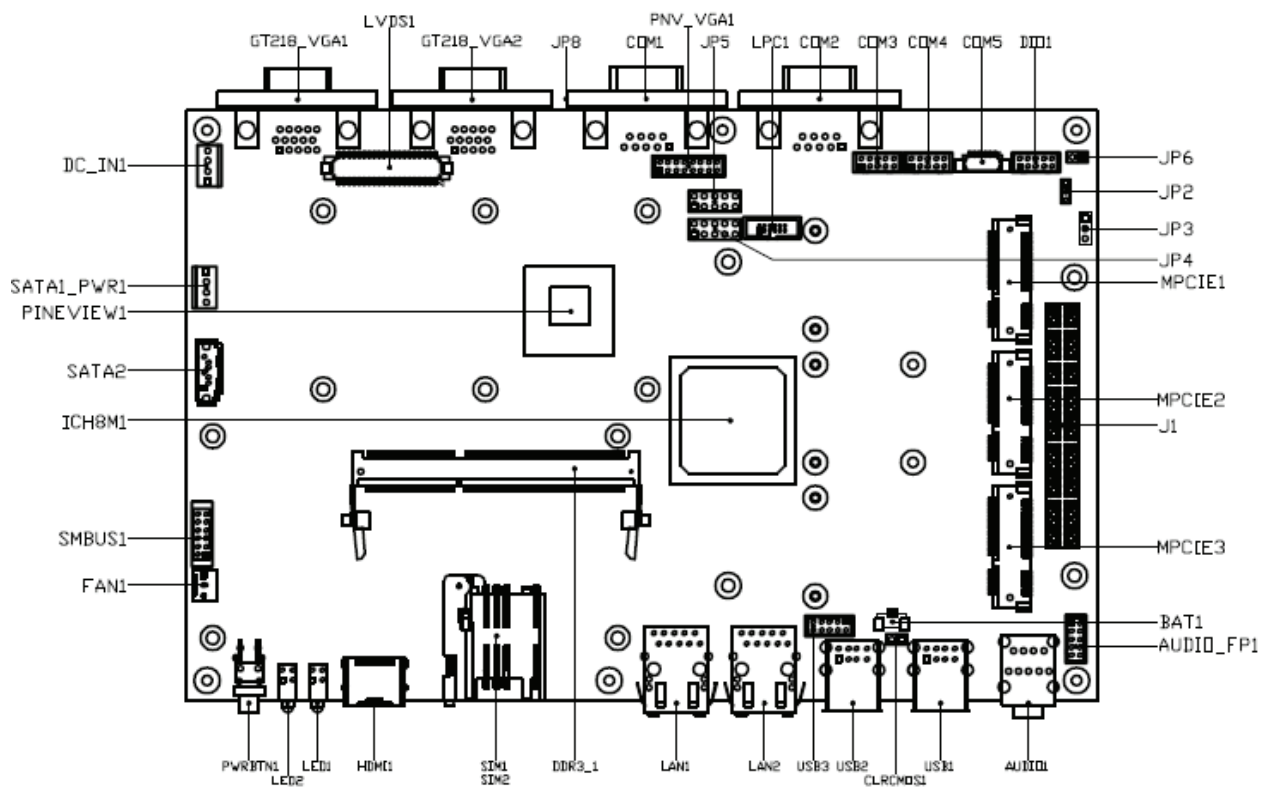
1.1 Model Specification

System	
CPU	Intel D525 Dual Core 1.8GHz Processor
Memory	1 x DDR3 800MHz SO-DIMM up to 4GB
Chipset	ICH8M
Graphics	Intel GMA 3150 Graphics
LAN Chipset	2 x Realtek RTL8111E Gb/s Ethernet Controllers onboard Support WOL PXE
Audio	Realtek ALC662 HD Codec onboard
Watchdog	1 ~ 255 Level Reset
Power Requirement	
Power Input	9V-32V DC Power input
Power Management	Vehicle Power Ignition for Variety Vehicle
Power Off Control	Power off Delay Time Setting by Software, Default is 5 Mins
Battery	Internal Battery Kit for 10 Mins Operating (Optional)

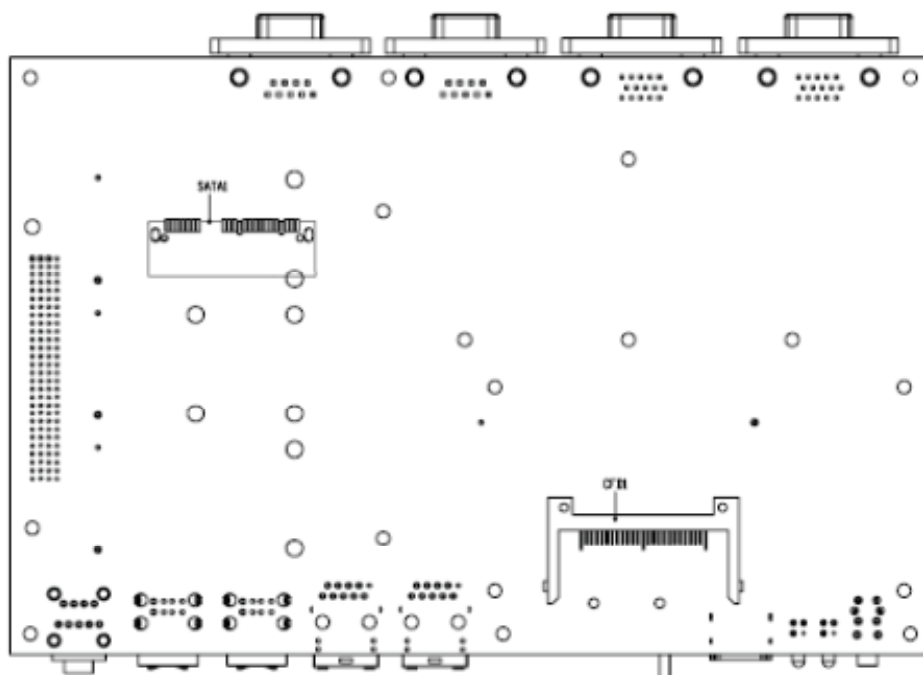
Graphics	
GMA 3150	1 X DB15 for VGA Output
Storage	
Type	1 x 2.5" drive bay for SATA Type Hard Disk Drive / SSD / CF Card
Qualification	
Certifications	CE, FCC, Class A
I/O	
Serial Port	2x RS-232/RS-422/485, Can be up to 4 x RS-232
USB Port	4 x USB 2.0 Ports
LAN	2 x RJ45 Ports for GbE
Video Port	1 x DB15 Connector for VGA Output
DIO Port	4 DI / 2 x DO and 12V Output
Audio	1 x Realtek ALC662 HD Codec onboard
Expansion Bus	2 x Mini-PCIe socket supported 1 x Mini-PCIe socket for WWAN module with SIM Card 1 x PCI-104 slot supported
Environment	
Operating Temp.	-20 ~ 60°C (SSD), ambient w/ air
Storage Temp.	-40 ~ 80°C
Relative Humidity	10 ~ 90% (non-condensing)
Vibration (random)	2.5g@5~500 Hz with SSD
Vibration Operating	MIL-STD-810F, Method 514.5, Category 20, Ground Vehicle-Highway
Truck Storage	MIL-STD-810F, Method 514.5, Category 24, Integrity Test
Shock	Operating: MIL-STD-810F, Method 516.5, Procedure I, Trucks and semi-trailers=40G(11ms), Non-Operating 80G with SSD
Crash Hazard	MIL-STD-810F, Method 516.5, Procedure V, Ground equipment=100
Mechanical	
Construction	Aluminum alloy
Mounting	Supports both of wall-mount/VESA-mount
Weight	1.5 kg (bare-bone)
Dimensions	235 x 155 x 55 mm

1.2 VBOX-3100 Illustration

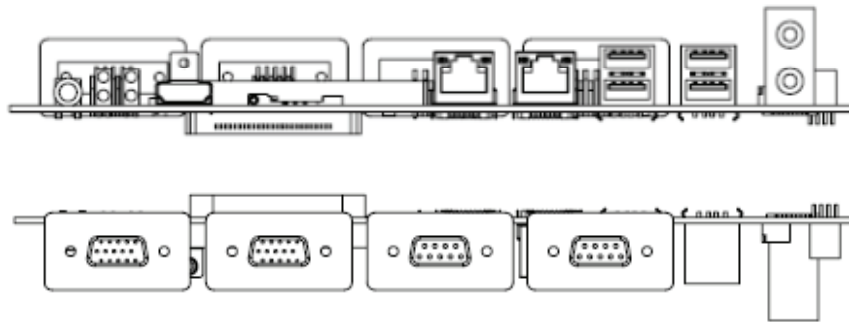
Top View



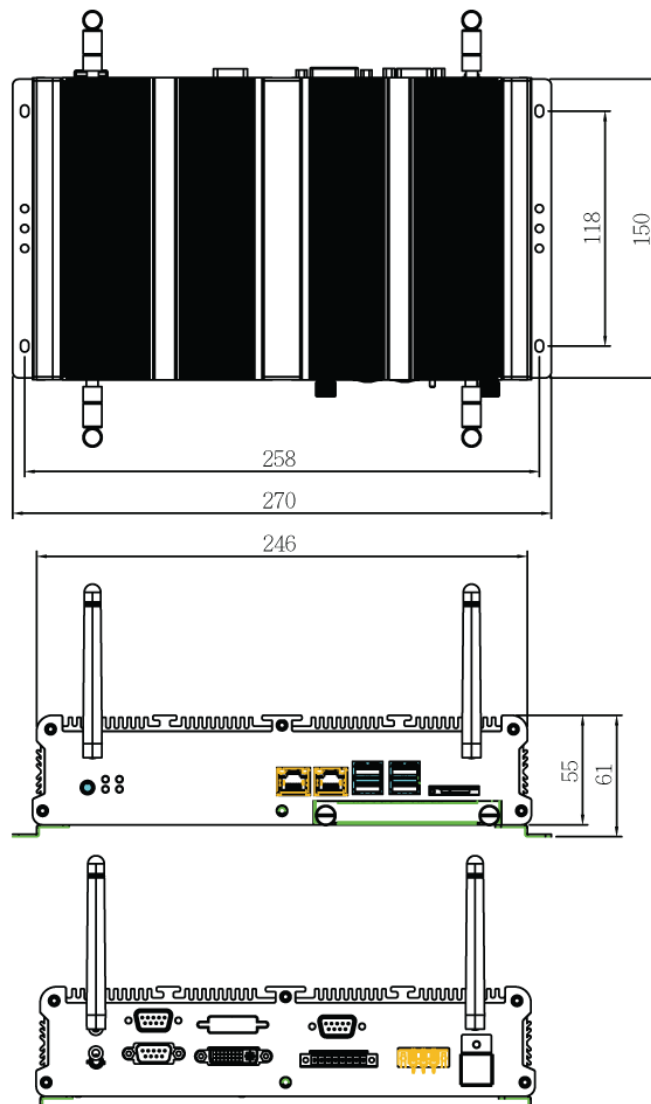
Bot View



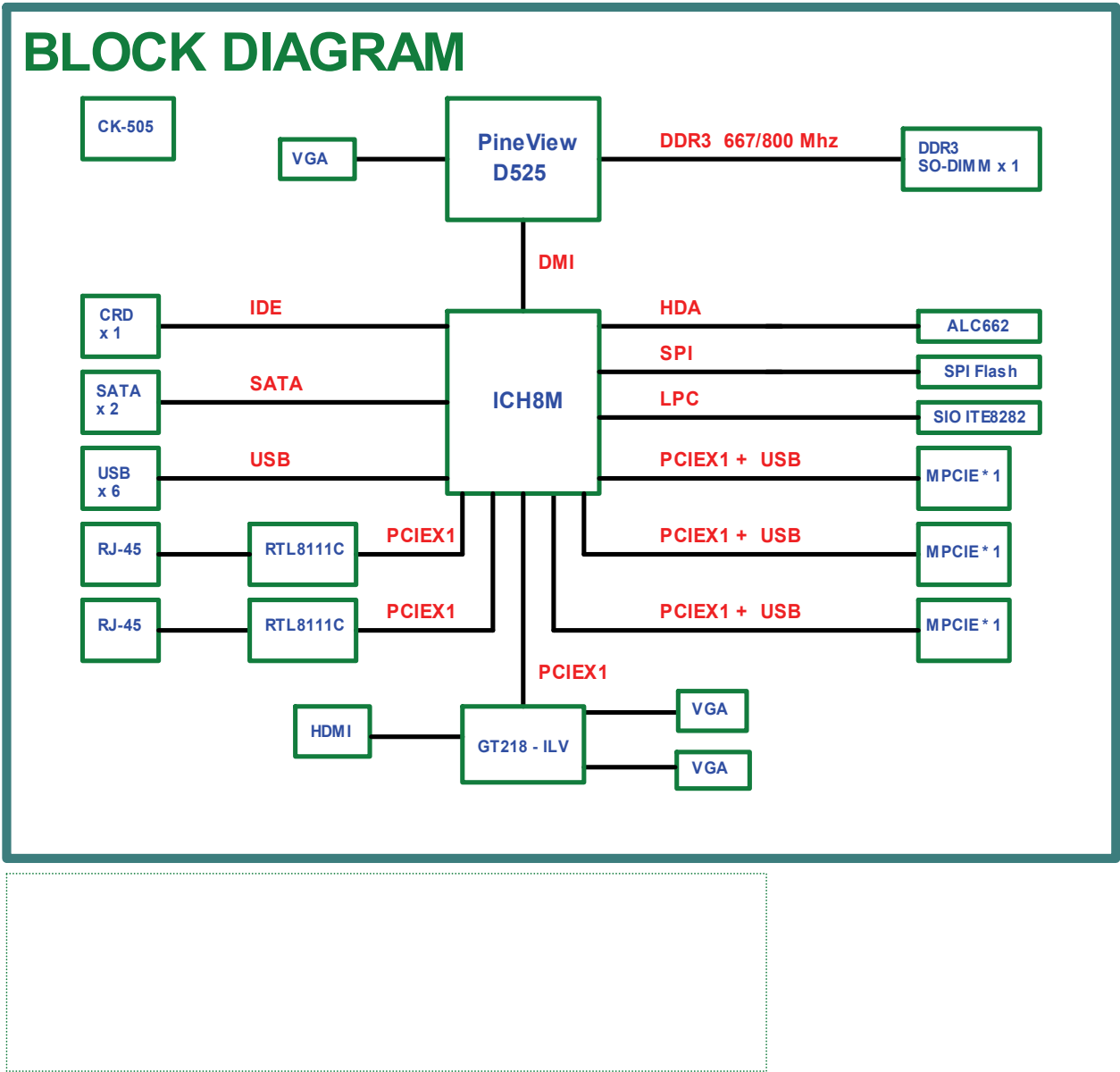
Rear Panel



System



1.3 Block Diagram



1.4 Jumper List:

Label	Function	BIOS	Result
CLRCMOS1	Clear CMOS Selection		
JP2	Digital Input / Output Voltage Select		
JP3	PC104 +VIO Voltage Select		
JP4	COM1,2 P9 Power Selection		
JP5	COM3,4 P9 Power Selection		
JP6	WDT Enable Selection		
JP8	Backlight Enable Selection		

1.5 Connector List

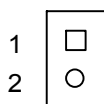
Label	Function	BIOS	Result
DC_IN1	+12V Power Input Connector		
PNV_VGA1	Pineview VGA BOX HEADER		
LPC1	LPC Debug Port Connector		
COM3	RS-232 Port B Wafer		
COM4	RS-232 Port B Wafer		
COM5	TTL LEVEL UART Port		
DIO1	Digital Input / Output Connector		
LVDS1	LVDS Panel Connector		
SATA2	Serial ATA Connector		
SATA1_PWR1	SATA Power Connector		
MPCIE1	Mini PCIE slots		
MPCIE2	Mini PCIE slots		
MPCIE3	Mini PCIE slots		
SMBUS1	SMBUS Box Connector		
FAN1	SYS FAN Wafer		
DDR3_1	DDR3 Memory SO-DIMM Socket		
USB3	USB2.0 Port 4, 5 Pin Header		
BAT1	BATTERY Connector		
AUDIO_FP1	Front Panel Audio Pin Header		
AMP_R1	Audio AMP Right Output Wafer		
AMP_L1	Audio AMP Left Output Wafer		
J1	PC104+ Extension Wafer		
SATA1	Serial ATA & HDD Power Connector		

1.6 Rear Panel Connector List

Label	Function	BIOS	Result
PWRBTN1	Push button on front I/O for power on/off		
LED2	WLAN1&3 LED		
LED1	WLAN2 & HDD LED		
HDMI1	HDMI Connector		
SIM1	Card Reader		
LAN1	10/100/1000 Ethernet RJ-45 Connector		
LAN2	10/100/1000 Ethernet RJ-45 Connector		
USB2	USB2.0 Port 2 , 3 Type A Connector		
USB1	USB2.0 Port 0 , 1 Type A Connector		
AUDIO1	2-Port Audio phone jack		
GT218_VGA1	GT218_VGA Connector1		
GT218_VGA2	GT218_VGA Connector2		
COM1	RS-232 Port A DB-9 Connector		
COM2	RS-232 Port A DB-9 Connector		

(2) Jumper Setting

2.1 CLRCMOS1 Clear CMOS Selection



Jumper	Status
Open	Normal Operation
Short	Clear CMOS

DIP 2P 1R MALE STRAIGHT TYPE Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]

2.2 JP2 Digital Input / Output Voltage Select



Jumper	Status
1-2	+12VSB
2-3	+5VSB

DIP 3P 1R MALE STRAIGHT TYPE Pitch:2.0mm [YIMTEX 3291*03SAGR(6T)]

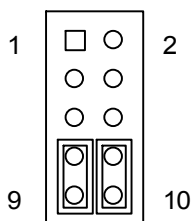
2.3 JP3 PC104 +VIO Voltage Select



Jumper	Status
1-2	+3.3V
2-3	+5V

DIP 3P 1R MALE STRAIGHT TYPE Pitch:2.54mm [YIMTEX 3321*03SAGR(6T)]

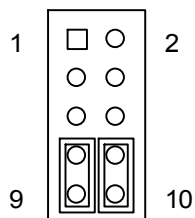
2.4 JP4 COM1,2 Port Signal / Power Selection



Jumper	Setting	Function
1	1-3 Short	Pin 1 = +12V
	3-5 Short	Pin 1 = +5V
	5-7 Short	Pin 1 = +5V
	7-9 Short	Pin 1 = RI
2	2-4 Short	Pin 9 = +12V
	4-6 Short	Pin 9 = +5V
	6-8 Short	Pin 9 = +5V
	8-10 Short	Pin 9 = RI

DIP 10P 2R MALE STRAIGHT TYPE Pitch:2.54mm [YIMTEX 3322*05SAGR(6T)]

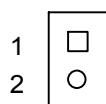
2.5 JP5 COM3,4 Port Signal / Power Selection



Jumper	Setting	Function
1	1-3 Short	Pin 1 = +12V
	3-5 Short	Pin 1 = +5V
	5-7 Short	Pin 1 = +5V
	7-9 Short	Pin 1 = RI
2	2-4 Short	Pin 9 = +12V
	4-6 Short	Pin 9 = +5V
	6-8 Short	Pin 9 = +5V
	8-10 Short	Pin 9 = RI

DIP 10P 2R MALE STRAIGHT TYPE Pitch:2.54mm [YIMTEX 3322*05SAGR(6T)]

2.6 JP6 WDT Enable Selection



Jumper	Status
Open	Disable
Short	Enable

DIP 2P 1R MALE STRAIGHT TYPE Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]

2.7 JP8 Backlight Enable Selection



Jumper	Status
1-2	Active High
2-3	Active Low

DIP 3P 1R MALE STRAIGHT TYPE Pitch:2.0mm [YIMTEX 3291*03SAGR(6T)]

(3) Connector Pin Assignment

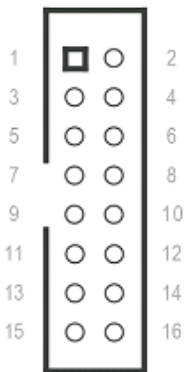
3.1 DC_IN1+12V Power Input Connector



Pin	Signal
1	+12V
2	+12V
3	GND
4	GND

HOUSING 4P 180D (M) P-2.5mm [YIMTEX 512CW4ST-1R] LEAD FREE

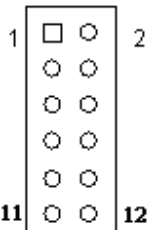
3.2 PNV_VGA1 Pineview VGA BOX HEADER



Pin	Signal	Pin	Signal
1	VGA_RED	2	VGA_GREEN
3	VGA_BLUE	4	GND
5	GND	6	VGA_PWR
7	GND	8	GND
9	VGA_PWR	10	GND
11	GND	12	VGA_DDCDAT
13	VGA_HSYNC	14	VGA_VSYNC
15	VGA_DDCCLK	16	GND

DIP 16P 2R 180° Pitch:2.0mm WAFER [Chyao-Shiunn JS-2008A-2x08]

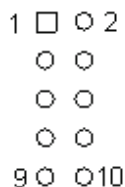
3.3 LPC1 LPC Debug Port Connector



Pin	Signal	Pin	Signal
1	LPC_CLK	2	LPC_SERIRQ
3	LPC_RST#	4	+3.3V
5	LPC_AD0	6	LPC_DRQ1#
7	LPC_AD1	8	+5V
9	LPC_AD2	10	NC
11	LPC_AD3	12	GND

DIP 12P 2R MALE 180° Pitch:1.27mm [YIMTEX 327A121SAGR(6T)]

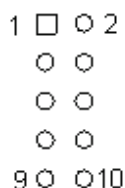
3.4 COM3 RS-232 Port B Wafer



Pin	Signal
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	+5V / +12V / RI, Ring indicator
10	NC

DIP 10P 2R 180° Pitch:2.0mm WAFER [Chyao-Shiunn JS-2008A-2x05]

3.5 COM4 RS-232 Port B Wafer



Pin	Signal
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	+5V / +12V / RI, Ring indicator
10	NC

DIP 10P 2R 180° Pitch:2.0mm WAFER [Chyao-Shiunn JS-2008A-2x05]

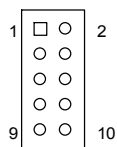
3.6 COM5 TTL LEVEL UART Port



Pin	Signal Name
1	+5V
2	UART_RX (TTL Level)
3	UART_TX (TTL Level)
4	WDT Output
5	GPS GPIO, default for input
6	GND

MINI BASE SMD 6P 180D P-1.25mm WAFER [Pinrex 712-73-06TWB0] LEAD FREE

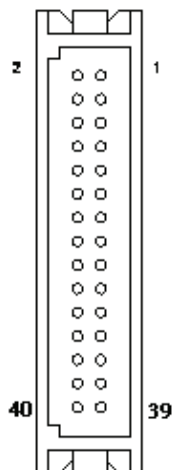
3.7 DIO1 Digital Input / Output Connector



Pin	Signal	Pin	Signal
1	Input #1	2	Input #2
3	Input #3	4	Input #4
5	Output #1	6	Output #2
7	Output #3	8	Output #4
9	GND	10	5V / 12V Selectable by jumper, default setting is 5V

DIP 10P 2R 180° Pitch:2.0mm WAFER [Chyao-Shiunn JS-2008A-2x05]

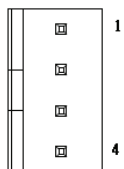
3.8 LVDS1 LVDS Panel Connector



Signal Name	Pin	Pin	Signal Name
LVDS_B0+	2	1	LVDS_A0+
LVDS_B0-	4	3	LVDS_A0-
LVDS_B1+	6	5	LVDS_A1+
LVDS_B1-	8	7	LVDS_A1-
GND	10	9	GND
LVDS_B2+	12	11	LVDS_A2+
LVDS_B2-	14	13	LVDS_A2-
LVDS_BCLK+	16	15	LVDS_ACLK+
LVDS_BCLK-	18	17	LVDS_ACLK-
LVDS_B3+	20	19	LVDS_A3+
LVDS_B3-	22	21	LVDS_A3-
GND	24	23	GND
+12V	26	25	+3.3V
+12V	28	27	+3.3V
LVDS_VOL_EN	30	29	+5V
LVDS_BKLT_EN	32	31	+5V
LVDS_BKLT_CTRL	34	33	+5V
PWR_SW#	36	35	GND
USB_VCC	38	37	USB-
USB_GND	40	39	USB+

SMD Male/40PIN/2ROWS/Pitch:1.25mm [Chyao-Shiunn JS-1256-20x2]

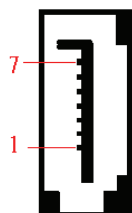
3.9 SATA1_PWR1 SATA Power Connector



Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

HOUSING 4P 180D (M) P-2.5mm [YIMTEX 512CW4ST-1R] LEAD FREE

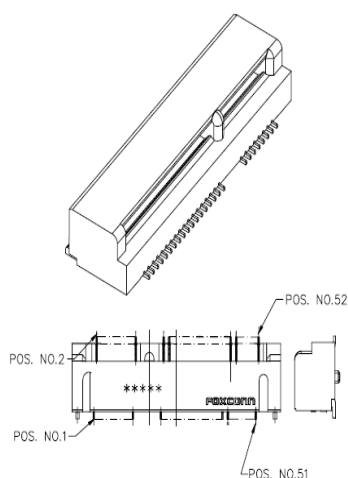
3.10 SATA2: SATA Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

DIP 7P 180D SATA CONNECTOR BLUE [FOXCONN LD1807V-S52U]

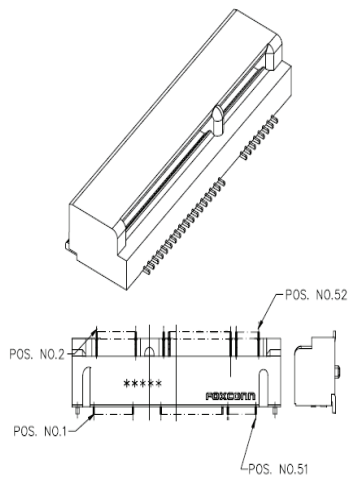
3.11 MPCIE1 Mini PCIE slots



Signal Name	Pin	Pin	Signal Name
PCIE_WAKE#	1	2	+3.3VSB
NC	3	4	GND
NC	5	6	+1.5V
NC	7	8	NC
GND	9	10	NC
MPCIE1_100M#	11	12	NC
MPCIE1_100M	13	14	NC
GND	15	16	NC
NC	17	18	GND
NC	19	20	MPCIE1_EN#
GND	21	22	RST_PCIE#
PCIE_RXN1	23	24	+3.3VSB
PCIE_RXP1	25	26	GND
GND	27	28	+1.5V
GND	29	30	SMB_CLK
PCIE_TXN1	31	32	SMB_DATA
PCIE_TXP1	33	34	GND
GND	35	36	USBN7
GND	37	38	USBP7
+3.3VSB	39	40	GND
+3.3VSB	41	42	LED_WLAN#
GND	43	44	LED_WLAN#
NC	45	46	LED_WLAN#
NC	47	48	+1.5v
NC	49	50	GND
NC	51	52	+3.3VSB

SMD PCIE 52P 90D(F) MINI PCI-Express Connector [FOXCONN AS0B226-S56N-7F]

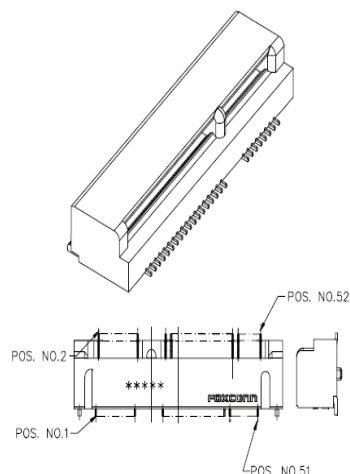
3.12 MPCIE2 Mini PCIE slots



Signal Name	Pin	Pin	Signal Name
PCIE_WAKE#	1	2	+3.3VSB
NC	3	4	GND
NC	5	6	+1.5V
NC	7	8	NC
GND	9	10	NC
MPCIE2_100M#	11	12	NC
MPCIE2_100M	13	14	NC
GND	15	16	NC
NC	17	18	GND
NC	19	20	MPCIE2_EN#
GND	21	22	RST_PCIE#
PCIE_RXN2	23	24	+3.3VSB
PCIE_RXP2	25	26	GND
GND	27	28	+1.5V
GND	29	30	SMB_CLK
PCIE_TXN2	31	32	SMB_DATA
PCIE_TXP2	33	34	GND
GND	35	36	USBN8
GND	37	38	USBP8
+3.3VSB	39	40	GND
+3.3VSB	41	42	LED_WLAN#
GND	43	44	LED_WLAN#
NC	45	46	LED_WLAN#
NC	47	48	+1.5v
NC	49	50	GND
NC	51	52	+3.3VSB

SMD PCIE 52P 90D(F) MINI PCI-Express Connector [FOXCONN AS0B226-S56N-7F]

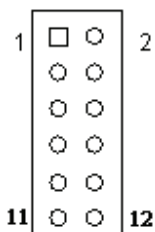
3.13 MPCIE3 Mini PCIE slots (3G Module only available on this slot)



Signal Name	Pin	Pin	Signal Name
NC	1	2	+3.3VSB
NC	3	4	GND
NC	5	6	NC
NC	7	8	UIM_PWR
GND	9	10	UIM_DATA
NC	11	12	UIM_CLK
NC	13	14	UIM_RESET
GND	15	16	NC
NC	17	18	GND
NC	19	20	MPCIE3_EN#
GND	21	22	NC
NC	23	24	+3.3VSB
NC	25	26	GND
GND	27	28	NC
GND	29	30	NC
PCIE_TXN3	31	32	NC
PCIE_TXP3	33	34	GND
GND	35	36	NC
GND	37	38	NC
+3.3VSB	39	40	GND
+3.3VSB	41	42	LED_WLAN#
GND	43	44	NC
NC	45	46	NC
NC	47	48	NC
NC	49	50	GND
NC	51	52	+3.3VSB

SMD PCIE 52P 90D(F) MINI PCI-Express Connector [FOXCONN AS0B226-S56N-7F]

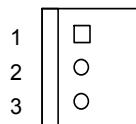
3.14 SMBUS1 SMBUS Box Connector



Pin	Signal	Pin	Signal
1	+5V Output	2	+12V Output
3	SMBUS GPIO (default for output, BIOS selectable – SMBus status)	4	Power Button
5	SMB_DATA	6	GND
7	SMB_CLK	8	GND
9	COM6_RX(TTL Level)	10	COM6_TX(TTL Level)
11	H/W System Reset	12	WDT Output

DIP 12P 2R 180° Pitch:2.0mm WAFER [Chyao-Shiunn JS-2008A-2x06]

3.15 FAN1 FAN Wafer



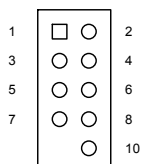
Pin	Signal
1	GND
2	+12V
3	FAN_RPM

DIP 3P 521AW1*03STR (M) 180D P-2.54mm WAFER [YIMTEX 521AW1*03STR] LEAD FREE

3.16 DDR3_1 DDR3 Memory SO-DIMM Socket

SOCKET SMD SO DIMM 204P DDR3 1.5V High=5.2mm Reverse Type [ARGOSY DDRRK-20401-TP5B]Lead Free

3.17 USB3 USB2.0 Port 4,5 Pin Header



Pin	Signal Name	Pin	Signal Name
1	USB_5V	2	GND
3	USB A-	4	GND
5	USB A+	6	USB B+
7	GND	8	USB B-
9	GND	10	USB_5V

DIP 10P 2R 180° Pitch:2.0mm WAFER [Chyao-Shiunn JS-2008A-2x05] LEAD FREE

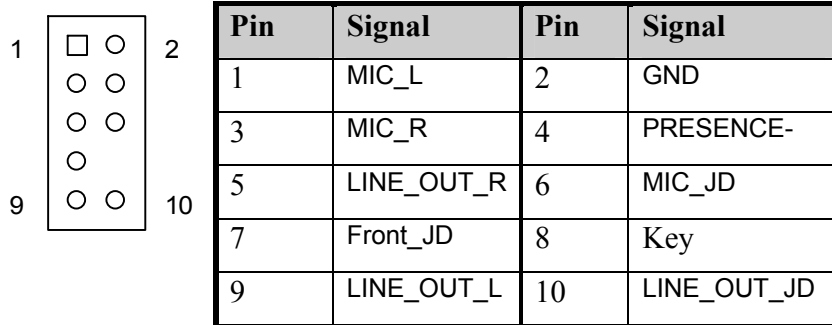
3.18 BAT1 BATTERY Connector



Pin	Signal Name
1	+3V
2	GND

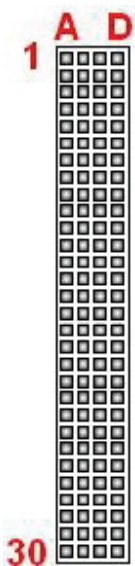
SMD 2P 180D P-1.25mm WAFER [Pinrex 712-73-02TWR0] LEAD FREE

3.19 AUDIO_FP1 Front Panel Audio Pin Header



DIP 10P 2R 180° Pitch:2.0mm WAFER [Chyao-Shiunn JS-2008A-2x05] LEAD FREE

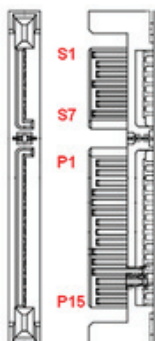
3.20 J1 PC104+ Extension Wafer



Pin	A	B	C	D
1	GND	Reserved	+5V	AD0
2	+3.3V	AD2	AD1	+5V
3	AD5	GND	AD4	AD3
4	C/BE0#	AD7	GND	AD6
5	GND	AD9	AD8	GND
6	AD11	+3.3V	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1#	AD15	+3.3V
9	SERR#	GND	SB0#	PAR
10	GND	PARR#	+3.3V	SDONE
11	STOP#	+3.3V	LOCK#	GND
12	+3.3V	TRDY#	GND	DEVSEL#
13	FRAME#	GND	IRDY#	+3.3V
14	GND	AD16	+3.3V	C/BE2#
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3#	+3.3V	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0#	GND	REQ1#	+3.3V
24	GND	REQ2#	+5V	GNT0#
25	GNT1#	+3.3V	GNT2#	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD#	+5V	RST#
29	+12V	INTA#	INTB#	INTC#
30	NC	Reserved	Reserved	+3.3V KEY

DIP PCI104 120P [YIMTEX 3204*30SBS1ANR] LEAD FREE

3.21 SATA1 Serial ATA & HDD Power Connector



Pin	Signal Name	Pin	Signal Name
S1	GND	P5	GND
S2	TX+	P6	GND
S3	TX-	P7	+5V
S4	GND	P8	+5V
S5	RX-	P9	+5V
S6	RX+	P10	GND
S7	GND	P11	GND
P1	+3.3V	P12	GND
P2	+3.3V	P13	+12V
P3	+3.3V	P14	+12V
P4	GND	P15	+12V

SMD 7P+15P MALE 90DSpear=1.50±0.05mm, Post=1.50±0.05mm SATA CONNECTOR BLACK
[WIN WIN WATB-22DL1PMU (短腳)] LEAD FREE

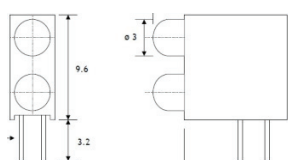
(4) Rear Panel Pin Assignments

4.1 PWRBTN1 Push button on front I/O for power on/off

Pin	Signal	COMMENTS
1	GND	
2	GND	
3	PWR_BTN#	
4	PWR_BTN#	
L1	SLP_S4#	
L2	SUSLED#	

SWITCH PUSH BUTTOM DIP 6-PIN 90D LED COLOR Red and Blue [HIGHLY PB6156RSL-14]
LEAD FRE

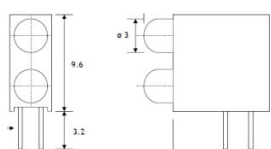
4.2 LED2 WLAN1&3 LED



Pin	Signal Name
1	+3.3V
2	WLAN_LED1-(GND)
3	+3.3V
4	WLAN_LED3-(GND)

LED DIP 4P 4.3*9.6mm BWC/Y COLOR [早安 BL-39(BWC)Y-2] LEAD FREE

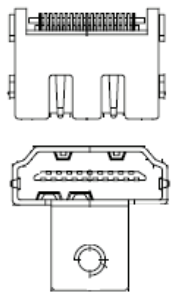
4.3 LED1 WLAN2 & HDD LED



Pin	Signal Name
1	+3.3V
2	WLAN_LED2-(GND)
3	+3.3V
4	HDD_ACT#

LED DIP 4P Red Green 4.3*9.6*9mm [早安 BL-39GR-2] LEAD FREE

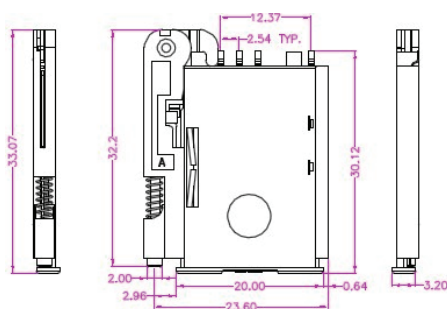
4.4 HDMI1 HDMI Connector



Signal Name	Pin	Pin	Signal Name
TMD_DATA2+	1	2	GND
TMD_DATA2-	3	4	TMD_DATA1+
GND	5	6	TMD_DATA1-
TMD_DATA0+	7	8	GND
TMD_DATA0-	9	10	HDMI_TCLP
GND	11	12	HDMI_TCLN
NC	13	14	NC
DDC_CLK	15	16	DDC_DATA
GND	17	18	+5V
HPDET	19		

HDMI right angle with screw hole, SMD 90° 19pin [WIN WIN WHDM-19F3L1BF3U4] LEAD FREE

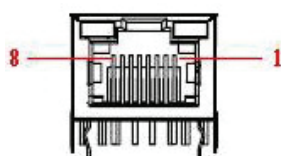
4.5 SIM1 Card Reader



Pin	Signal Name	Pin	Signal Name
1	UIM_CLK	2	UIM_DATA
3	UIM_RESET	4	UIM_VPP
5	UIM_PWR	6	GND
9	GND	10	GND

SIM Card CONNECTOR SMD 6P [MOLEX SD-91228-001] LEAD FREE

4.6 LAN1 10/100/1000 Ethernet RJ-45 Connector

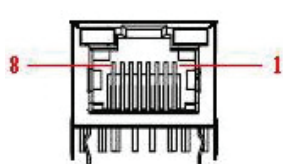


Pin	Signal Name	Pin	Signal Name
1	MDI 0+	2	MDI 0-
3	MDI 1+	4	MDI 1-
5	MDI 2+	6	MDI 2-
7	MDI 3+	8	MDI 3-

LAN LED	Function
Yellow	LINK / ACTIVE
OFF / GREEN / ORANGE	10 / 100 / 1000(Speed)

RJ45+TFM+LED 10/100/1000 14P DIP 90° for EMI Class B [UDE RT7-174AAK1A]

4.7 LAN2 10/100/1000 Ethernet RJ-45 Connector

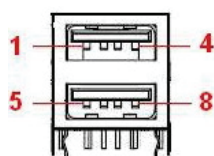


Pin	Signal Name	Pin	Signal Name
1	MDI 0+	2	MDI 0-
3	MDI 1+	4	MDI 1-
5	MDI 2+	6	MDI 2-
7	MDI 3+	8	MDI 3-

LAN LED	Function
Yellow	LINK / ACTIVE
OFF / GREEN / ORANGE	10 / 100 / 1000(Speed)

RJ45+TFM+LED 10/100/1000 14P DIP 90° for EMI Class B [UDE RT7-174AAK1A]

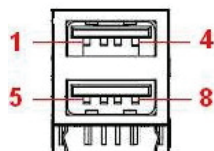
4.8 USB2 USB2.0 Port 2 , 3 Type A Connector



Pin	Signal Name	Pin	Signal Name
1	+USBVCC23	5	+USBVCC23
2	USBN_2	6	USBN_3
3	USBP_2	7	USBP_3
4	GND	8	GND

DIP 4*2P 90D [FOXCONN UB11123-8D1-4F]

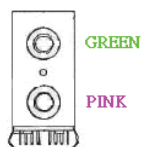
4.9 USB1 USB2.0 Port 0 , 1 Type A Connector



Pin	Signal Name	Pin	Signal Name
1	+USBVCC01	5	+USBVCC01
2	USBN_0	6	USBN_1
3	USBP_0	7	USBP_1
4	GND	8	GND

DIP 4*2P 90D [FOXCONN UB11123-8D1-4F]

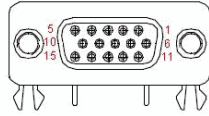
4.10 AUDIO1 2-Port Audio phone jack



	Signal Name
GREEN	LINE OUT
PINK	MIC IN

AUDIO JACK*3 DIP Vertical [Foxconn JA33331-H11P-4F]

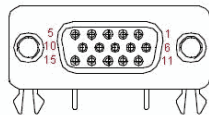
4.11 GT218_VGA1 GT218_VGA Connector1



Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	NC
GND	5	6	GND
GND	7	8	GND
VCC	9	10	GND
NC	11	12	DDC data
HSYNC	13	14	VSYNC
DDC clock	15		

4.12 D-SUB 15P DIP 90D CONNECTOR [LTW LTWHDB-15PFFP-SB8001]

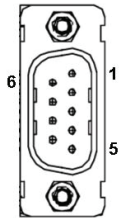
4.13 GT218_VGA2 GT218_VGA Connector2



Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	NC
GND	5	6	GND
GND	7	8	GND
VCC	9	10	GND
NC	11	12	DDC data
HSYNC	13	14	VSYNC
DDC clock	15		

D-SUB 15P DIP 90D CONNECTOR [LTW LTWHDB-15PFFP-SB8001]

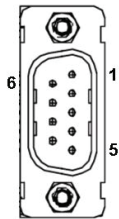
4.14 OM1 RS-232 Port A DB-9 Connector



Pin	Signal
1	RS-232 : DCD, Data carrier detect RS-422 : TX+ RS-485 : RTX+
2	RS-232 : RXD, Receive data RS-422 : RX+ RS-485 : N/A
3	RS-232 : TXD, Transmit data RS-422 : TX- RS-485 : RTX-
4	RS-232 : DTR, Data terminal ready RS-422 : RX- RS-485 : N/A
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator

Dual D-SUB 9 90D(M) [LTW LTWSDB-09PMMP-SB8001]

4.15 COM2 RS-232 Port A DB-9 Connector

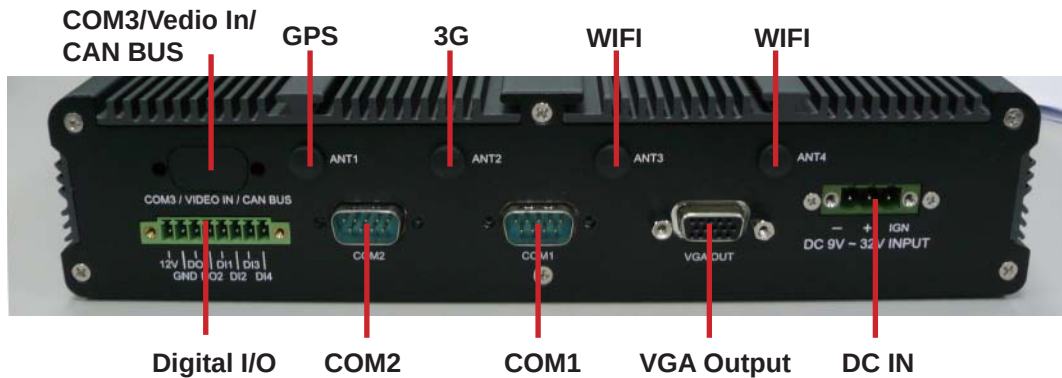
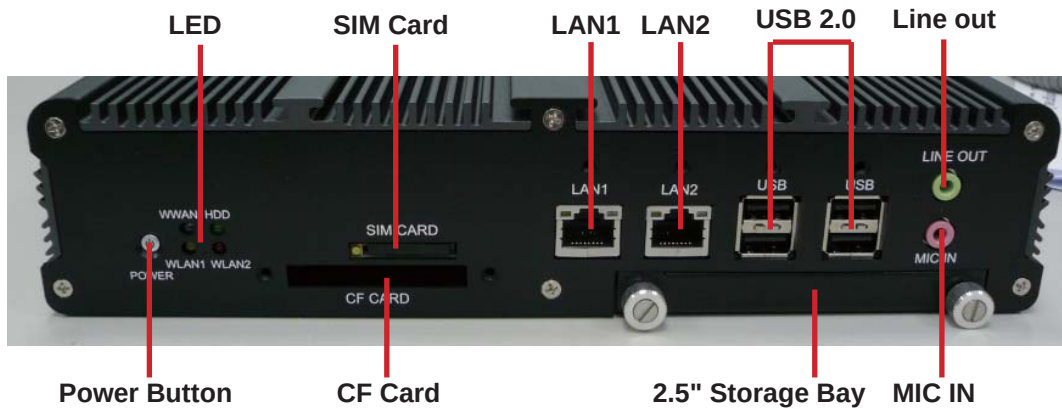


Pin	Signal
1	RS-232 : DCD, Data carrier detect RS-422 : TX+ RS-485 : RTX+
2	RS-232 : RXD, Receive data RS-422 : RX+ RS-485 : N/A
3	RS-232 : TXD, Transmit data RS-422 : TX- RS-485 : RTX-
4	RS-232 : DTR, Data terminal ready RS-422 : RX- RS-485 : N/A
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator

Dual D-SUB 9 90D(M) [LTW LTWSDB-09PMMP-SB8001]

5 System Installation

■ 5.1 System Introduction



■ 5.2 Opening Chassis

Step 1. Unscrew the six screws of the Back Cover as shown in the picture.



Step 2. Unscrew the six screws of the Front Panel as shown in the picture.



Step 3. Unscrew the six screws of the Rear Panel as shown in the picture.



Step 4. Open Top Cover as shown in the picture.



■ 5.3 Installing Memory

Step 1. Unscrew the four screws of the board and open it as shown in the picture.



Step 2. Put Memory on this place as shown in the picture.



Step 3. Hold the Memory with its notch aligned with the Memory socket of the board and insert it at a 30-degree angle into the socket as shown in the picture.



Step 4. Fully insert the module into the socket until a “click” is heard as shown in the picture.



Step 5. Put the board back and screw the four screws of the board as shown in the picture



■ 5.4 Installing MINI PCIe Expansion Card (PCIe 1)

Step 1. Put MINI PCIe Expansion Card on this place as shown in the picture.



Step 2. Hold the Module with its notch aligned with the socket of the board and insert it at a 30 degree angle into the socket as shown in the picture.



Step 3. Screw two screws to the holder as shown in the picture.



Step 4. Done as shown in the picture.



■ 5.5 Installing MINI PCIe Expansion Card (PCIe 2, Wifi Module)

Step 1. Put MINI PCIe Expansion Card on this place as shown in the picture.



Step 2. Hold the Module with its notch aligned with the socket of the board and insert it at a 30 degree angle into the socket as shown in the picture.



Step 3. Screw two screws to the holder as shown in the picture.



Step 4. Done as shown in the picture.



■ 5.6 Installing MINI PCIe Expansion (PCIe 3, 3G Module only)

Step 1. Put MINI PCIe Expansion Card on this place as shown in the picture.



Step 2. Hold the Module with its notch aligned with the socket of the board and insert it at a 30 degree angle into the socket as shown in the picture.



Step 3. Screw two screws to the holder as shown in the picture.



Step 4. Done as shown in the picture.



■ 5.7 Installing Internal Antenna Cable

Step 1. Take the SMA Connector and Plug into IO Panel as shown in the picture.



Step 2. Put the Washer into the SMA Connector as shown in the picture.



Step 3. Put the Oring to SMA Connector and tighten as shown in the picture.



Step 4. Done

Step 5. Take the Ipex Connector and press on the wifi module as shown in the picture.(Wifi)



Step 6. Take the Ipex Connector and press on the 3G module as shown in the picture. (3G)



Step 7. Take the Ipex Connector and press on the GPS module as shown in the picture. (GPS, only support passive Antenna)



■ 5.8 Installing SIM Card

Step 1. Use thin stick to push the button as shown in the picture.



Step 2. Take the holder away from VBOX-3100 as shown in the picture.



Step 3. Put your SIM Card into the holder as shown in the picture.



Step 4. Take the SIM card holder and Insert it into the socket as shown in the picture.



■ 5.9 Installing CF Card

Step 1. CF Card Socket as shown in the picture.



Step 2. Put your CF Card into the holder as shown in the picture.



Step 3. Take the CF card and Insert it into the socket as shown in the picture.



■ 5.10 Installing HDD

Step 1. Put the HDD into HDD Holder as shown in the picture.



Step 2. Screw two screws on both side as shown in the picture.



Step 3. Push the HDD Holder into the socket as shown in the picture.



Step 4. Fully insert the HDD Holder into the socket until a “click” is heard as shown in the picture.



Step 5. Tighten to Storage Bracket screws as shown in the picture.



(6) System Resources

6.1 Ignition Power Management Quick Guide

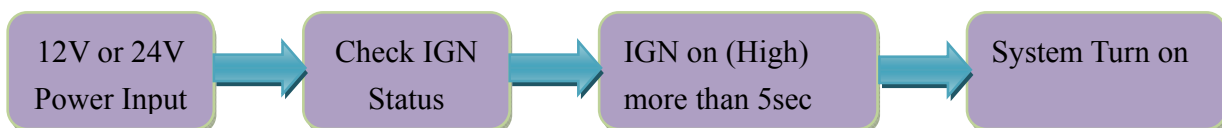
Startup/shutdown conditions from the IGNITION signal:

- IGNITION startup signal must be valid during 5 sec. (anti noise protection).
- IGNITION shutdown – IGNITION signal must be inactive during 5 minutes, then PIC controller initiate Power Button signal (OS must be set to shutdown from the Power Button). It generate Main Button shutdown event and then goes to complete power off.

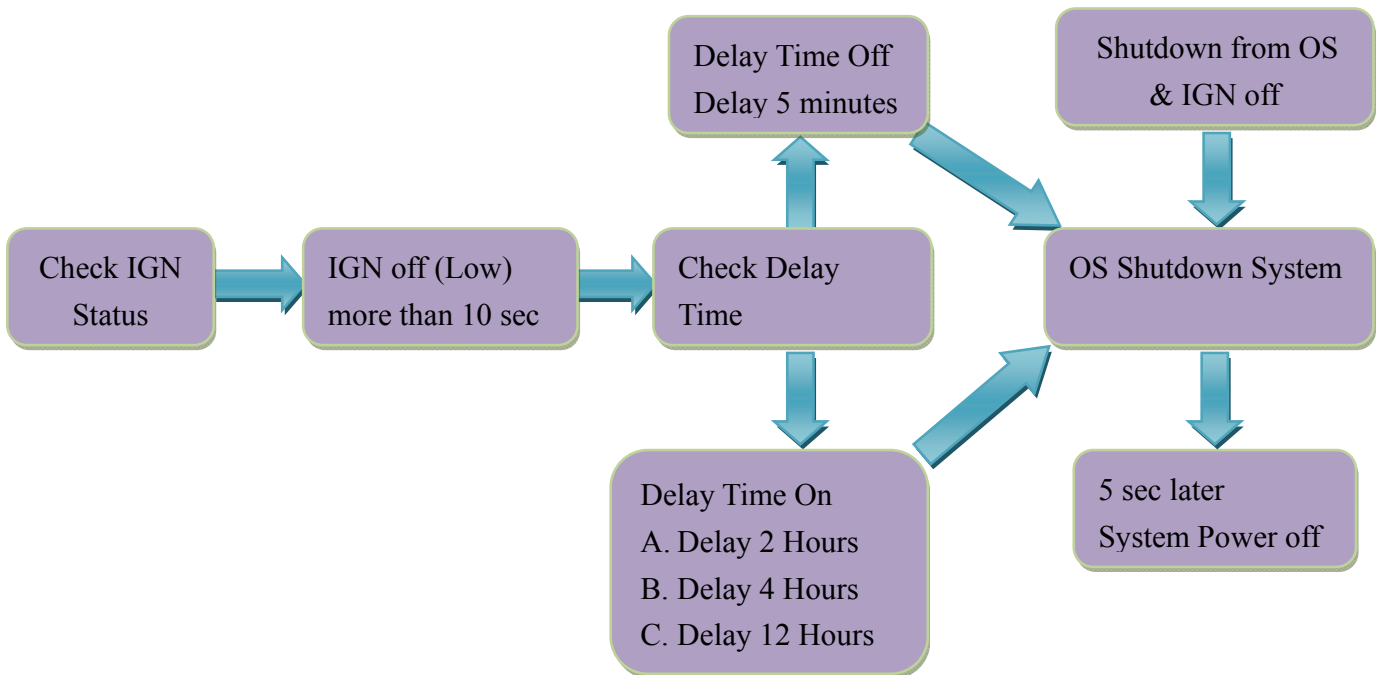
Typically the system can start only from IGNITION signal, because startup PIC controller is disconnected from the power source.

The system can be switched off from:

- Power IGNITION OFF signal.
- ACPI OS shutdown
- Power Button – generate ACPI event (OS dependent).



Power Ignition Startup Procedure



Power Ignition Shutdown Procedure

Power Management

- Power-off delay time is selectable by BIOS to disable and enable in 5 min / 2hr / 4hr / 12hr
- Ignition On/Off status detectable by SW
- If the ignition is off and the system is still on after 5 minutes, VBOX-3100 will shut down automatically.
- If the ignition is turned on again and the power-off delay is in progress, VBOX-3100 will cancel the delay function and will continue to operate normally.
- If the ignition is turned on again and the power-off delay ended, VBOX-3100 will shut down completely will power-on again automatically.

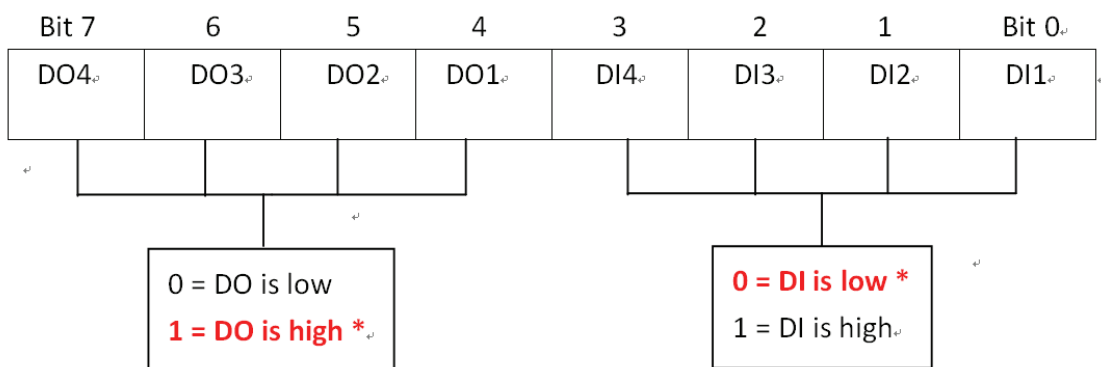
6.2 GPIO and Delay Time Setting

1. GPIO

I/O port: A05h

1.1 GPIO and Delay Time Control Register

The General Purpose I/O is an interface available on some devices. These can read digital signals from other parts of a circuit, or output to control other devices. At GPIO control register, the GPI is use to receive data, the GPO is set data to send.



2 Delay Time Setting

I/O port: 0x50Fh bit 4

Delay Time [Disable] → Low -- (Default)
[30 Min] → High

3 Ignition status (Read Only)

I/O port: 0x50Fh bit 2

Ignition off → Low
Ignition on → High

6.3 Gobi2000 WWAN Module Application Note

Document Number: VBOX-3100-WWAN-01

1. EQUIPMENT REQUIREMENTS

2. TEST SETUP

3. TEST

4. PASS/FAIL CRITERIA :

1. EQUIPMENT REQUIREMENTS

- Sierra Wireless Gobi 2000.
- FETnet 3G SIM Card with HSDPA operation.

2. TEST SETUP

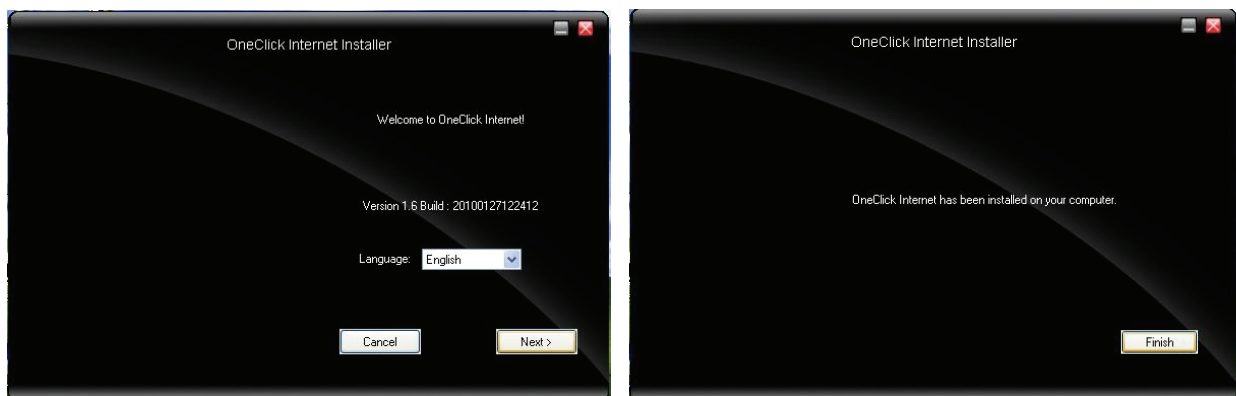


Figure 1: Install WWAN AP

Install WWAN AP and configure the EUT with the latest hardware and software. Place EUT in the test environment, and check the signal of the WWAN module should be as high as possible. Setup all appropriate test equipment for performing this test.



Figure 2: Signal of WWAN Module for UTMS Channels.

3. TEST Procedure

Power-up the EUT until it has completed its boot up process. Place the EUT in building and check the UMTS/HSDPA signal intensity. Connect to Internet through UMTS/HSDPA channel. Check the link speed if bandwidth is 7.2Mbps. Download a 10Mbytes test file from Internet. Record the results from the link states. Make sure it has no any error while downloading.

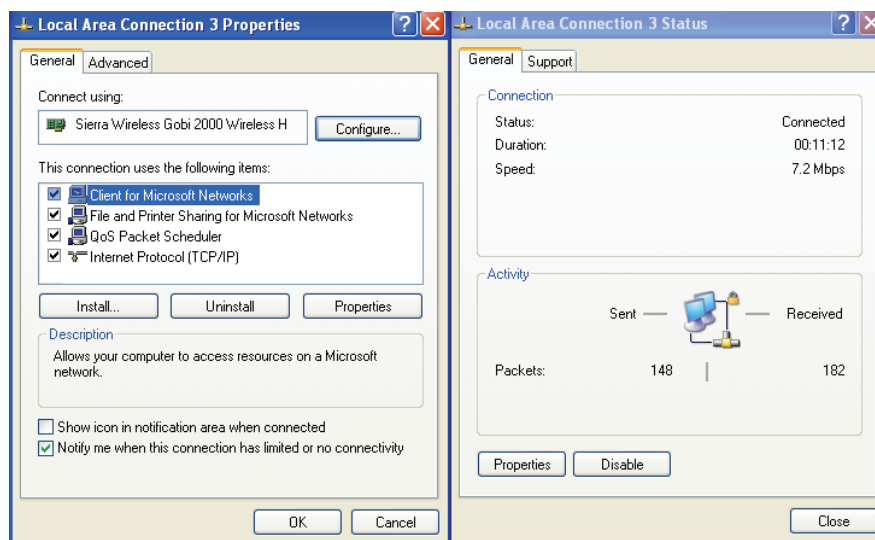


Figure 3: Link Speed of WWAN Module for UMTS/HSDPA Channels.

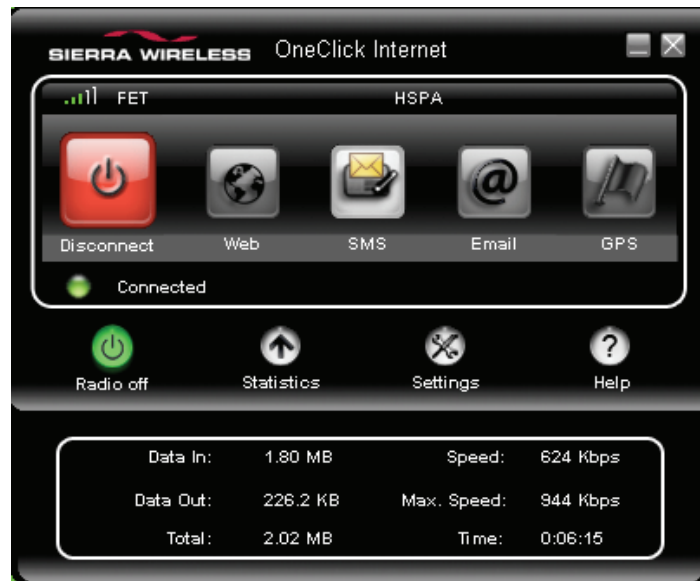


Figure 4: Link State of WWAN Module.

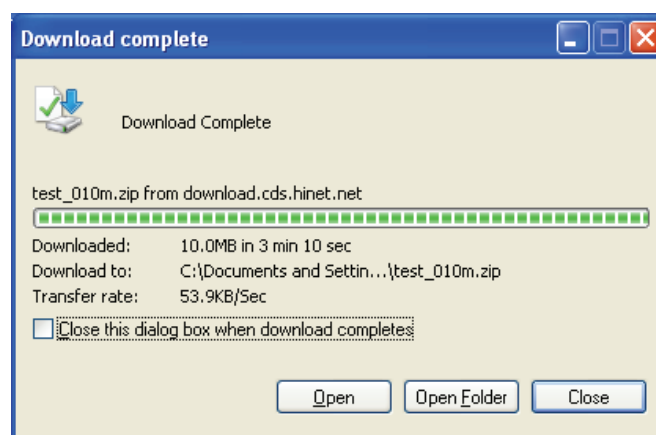
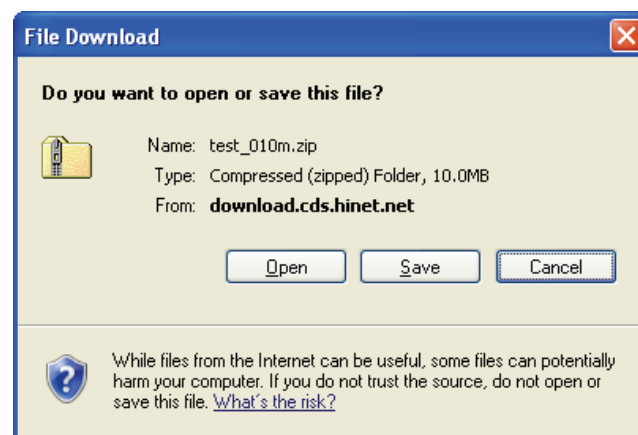
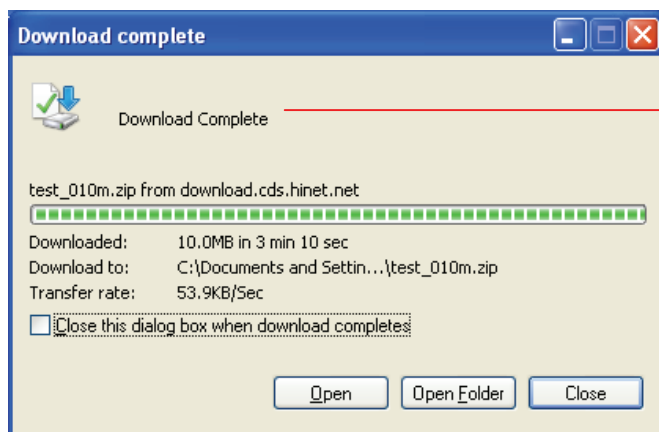


Figure 5: Download Test File from Internet.

4. PASS/FAIL CRITERIA :

PASS Criterion : The signal intensity item of the WWAN module must greater than 3 steps. And download test no any error.

Signal intensity item



Download complete and no any error

6.4 Gobi2000 GPS Module Application Note

Document Number: VBOX-3100-GPS-01

1. EQUIPMENT REQUIREMENTS

2. TEST SETUP

3. TEST

4. PASS/FAIL CRITERIA :

5. EQUIPMENT REQUIREMENTS

- Sierra Wireless Gobi 2000.
- FETnet 3G SIM Card with HSDPA operation.
- GPSview program.

6. TEST SETUP

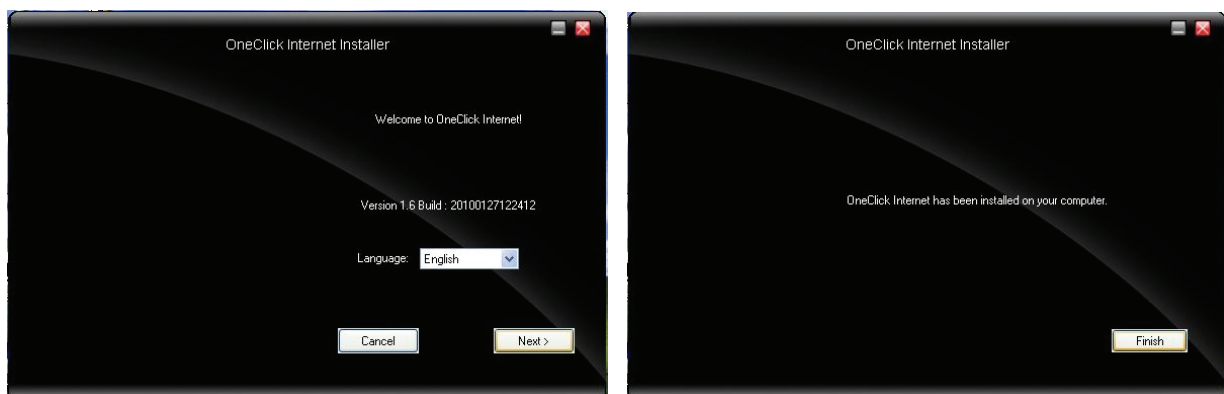


Figure 1: Install WWAN AP

Install WWAN AP and configure the EUT with the latest hardware and software. Place EUT in the test environment, and check the signal of the WWAN module should be as high as possible. Setup all appropriate test equipment for performing this test.



Figure 2: Signal of WWAN Module for UTMS Channels.

7. TEST

Out door power-up the EUT until it has completed its boot up process. Place the EUT in building and check the UMTS/HSDPA and GPS signal intensity. Get GPS longitude and latitude; connect to Internet through UMTS/HSDPA channel. Check Google Maps and GPSview satellite set and fix time.

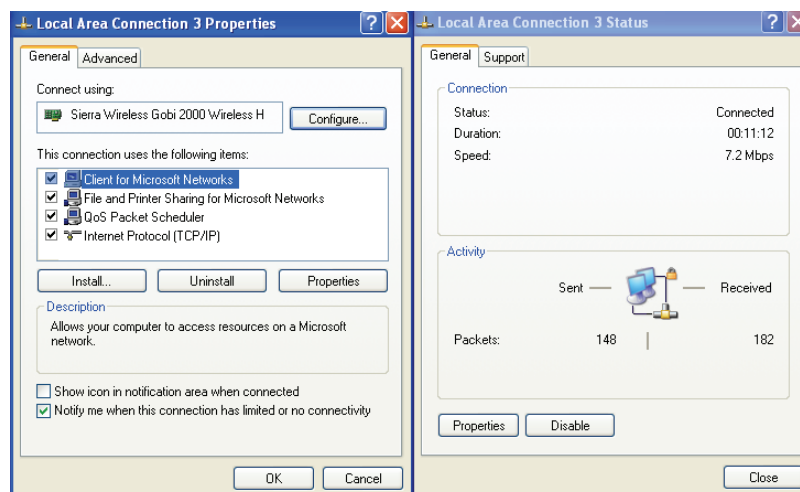


Figure 3: Link Speed of WWAN Module for UMTS/HSDPA Channels.

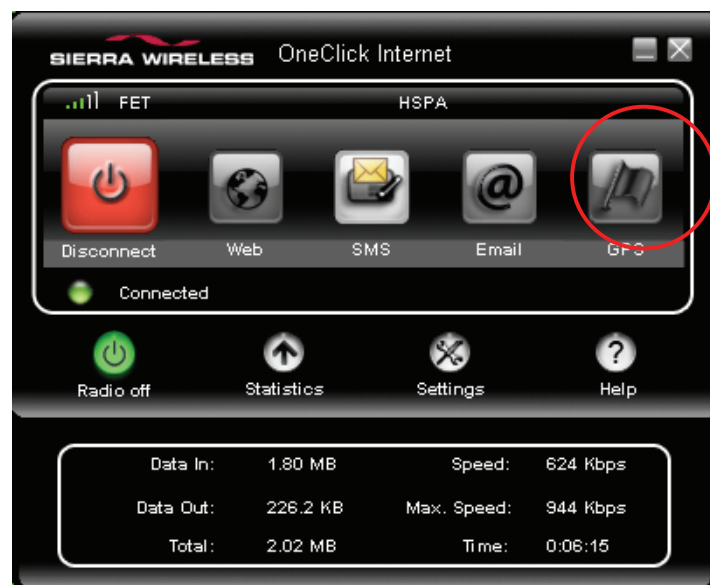


Figure 4: Link State of WWAN Module.



Figure 5: GPS longitude and latitude information.

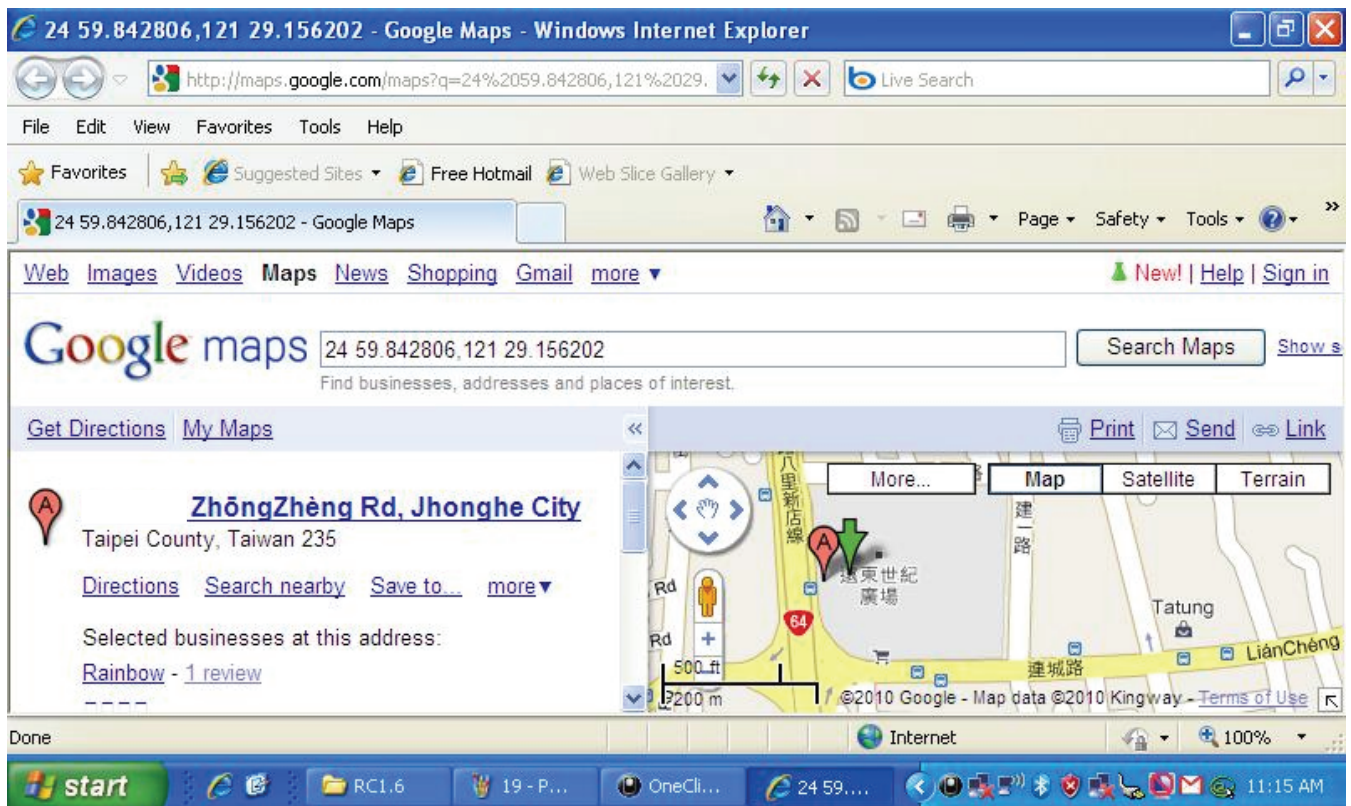


Figure 6: Link to Google Maps.

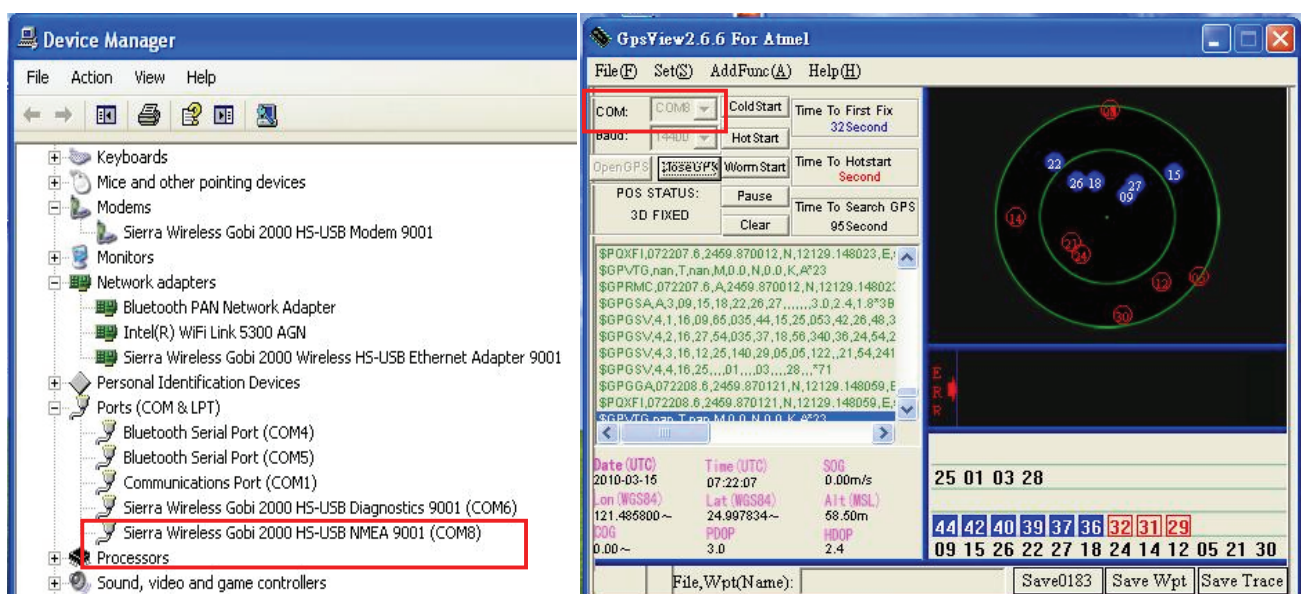


Figure 7: GPSview program test.

8. PASS/FAIL CRITERIA :

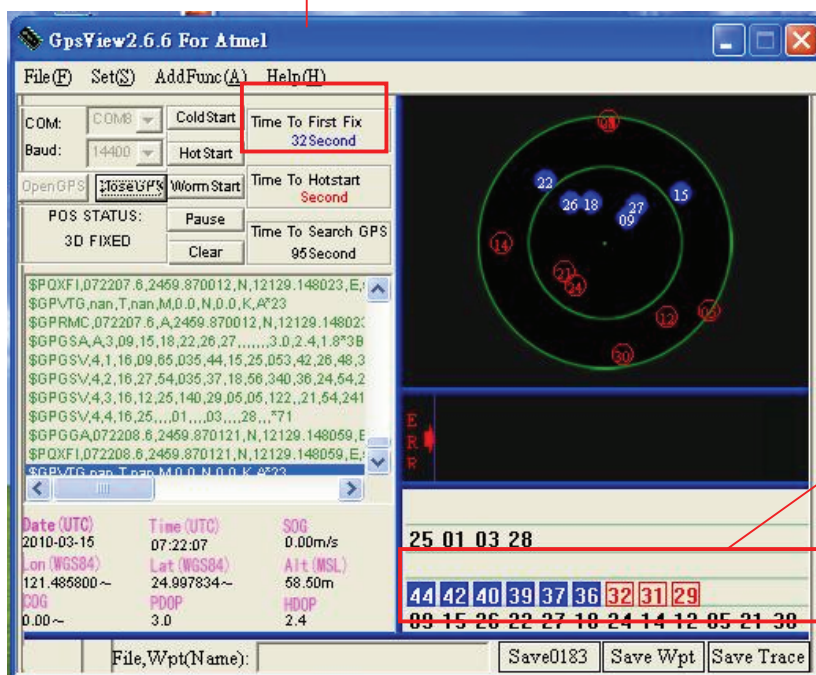
PASS Criterion :

We must check two results. One is amount of satellite, and another one is the satellite set and fix time.

The amount of satellite must exceed five satellites, and the intensity must exceed 30.

The satellite set and fix time must be smaller than 60 sec.

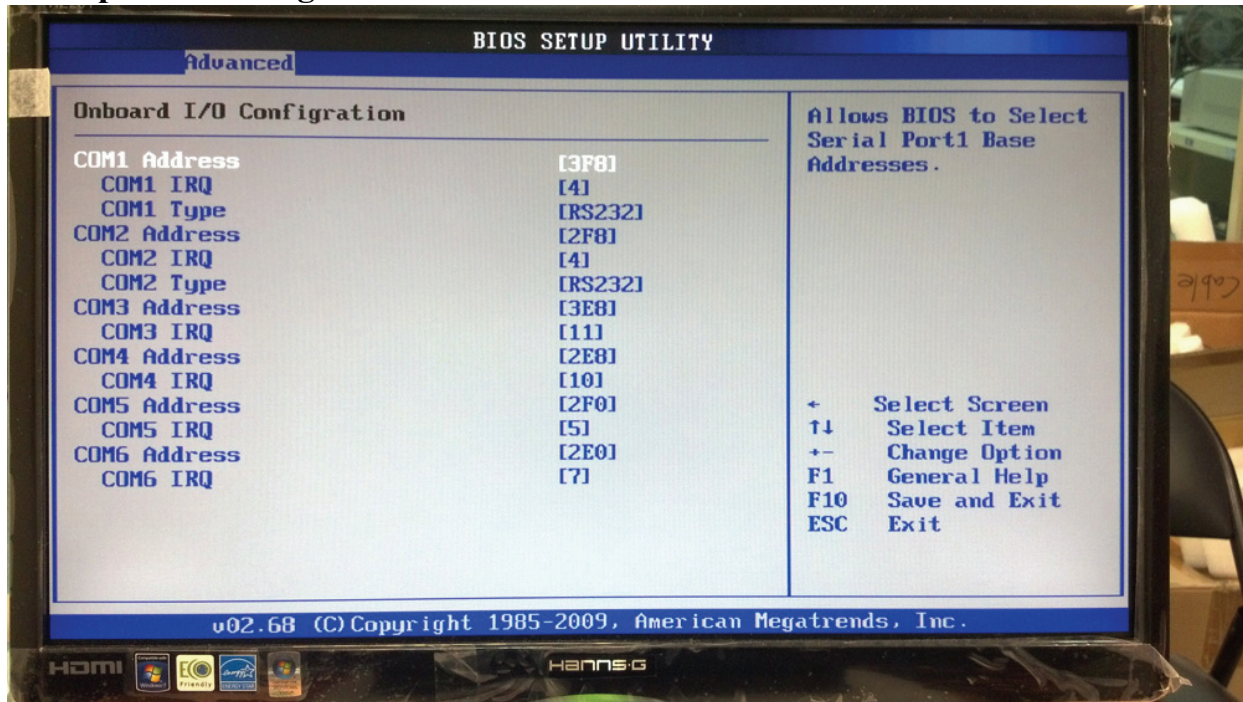
satellite set and fix time



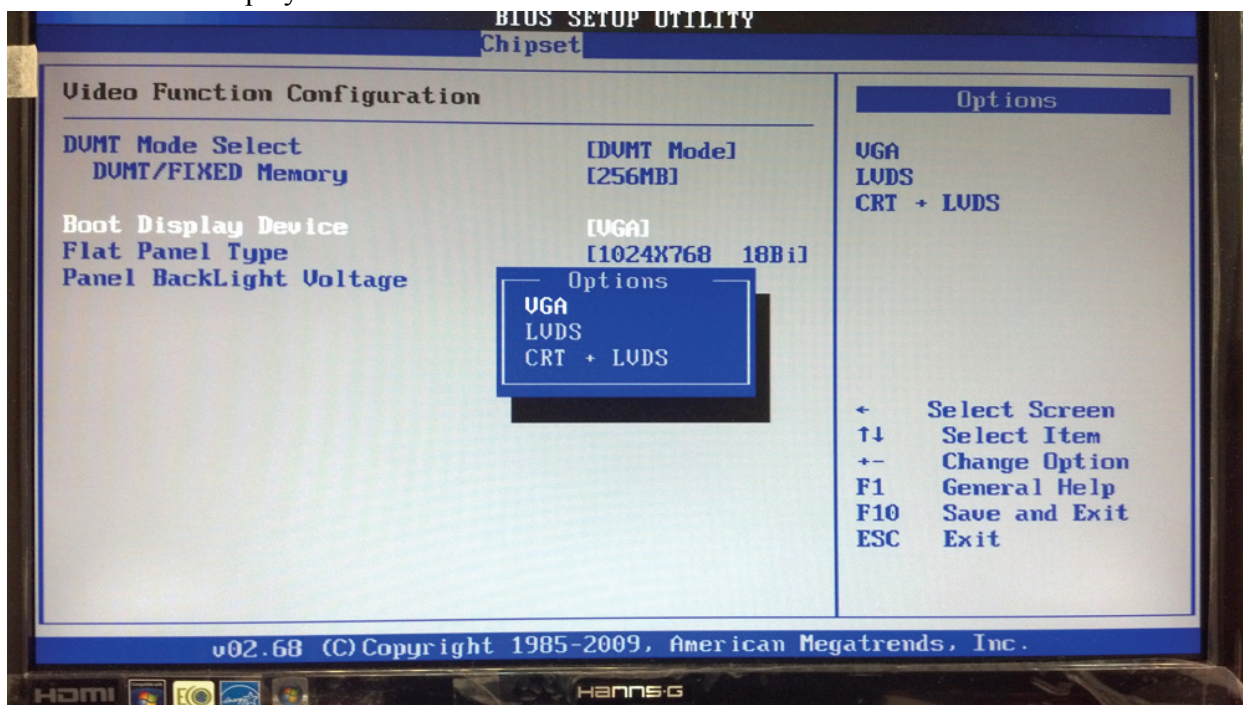
amount of satellite
and intensity

(7) BIOS

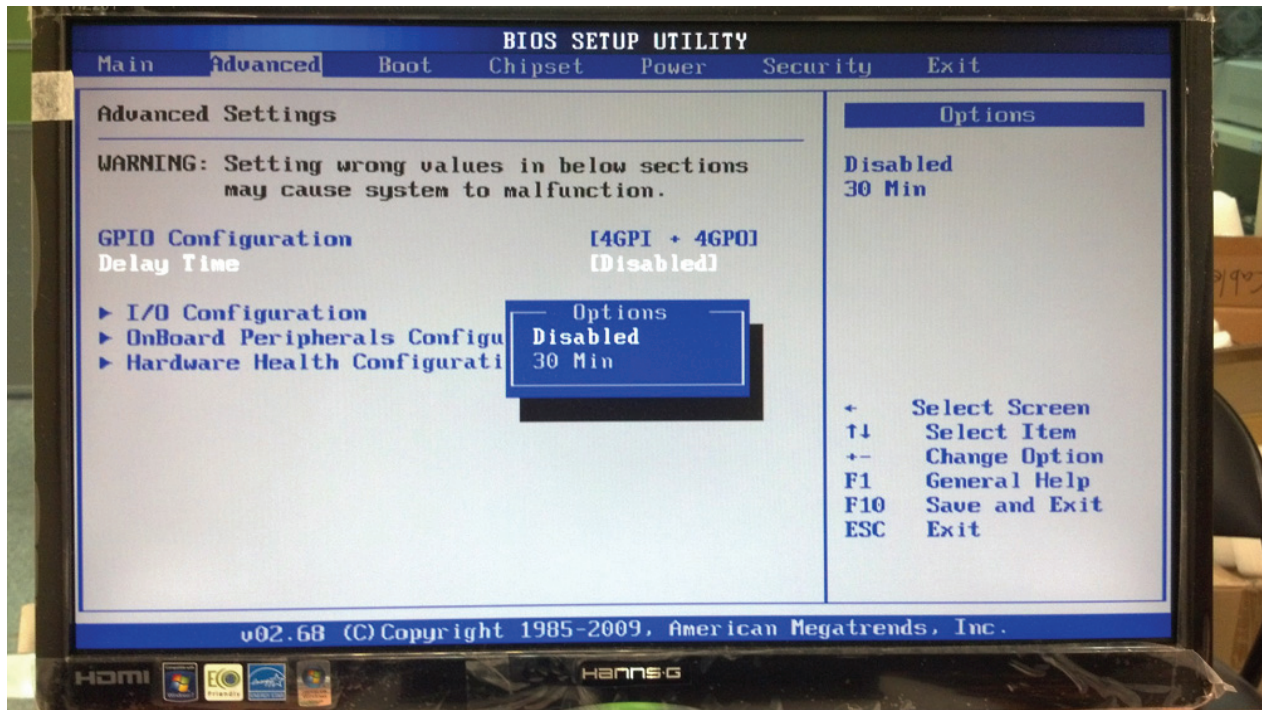
7.1 Super IO Configuration



Select Boot Display Device



Select Power off delay time



(8) Packing List

8.1 Packing List

Item	Part Number	Module Name
1	763100011000	VBOX-3100 System
2	370832001100	VBOX-3100 Mount Bracket
3	351102040110	Screw I Type M2*4L ISO NI
4	351103040250	Screw F Type M3*4
5	326710039661	CABLING PHOENIX CON MALE 3PIN
6	324610088661	CABLING PHOENIX CON MALE 8PIN
7	435000000000	Driver DVD

Optional

Memory	514001105300	APACER	APACER 1GB SO-DIMM DDR3 1333 204pin SODIMM 78.02GC6.420 (EL)
Memory	514002105000	PQI	APACER 2GB SO-DIMM DDR3 1333 204pin SODIMM (HY)
HDD	521340012200	WD	160GB SATA HDD / 5400/8MB/12ms , 9.5mm WD1600BEVT
HDD	521370012200	WD	320GB SATA HDD / 5400/8MB/12ms , 9.5mm WD3200BEVT
2.5" SSD	522130012030	APACER	8GB SSD (SLC Type) AP-SAFD254QA008GS-HT
2.5" SSD	523400002000	Intel	40GB SSD (MLC Type) X25V SSDSA2MP040G2K5
2.5" SSD	523410002000	Intel	80GB SSD (MLC Type) SSDSA2MH080G2K5
2.5" SSD	523340002000	Intel	160GB SSD (MLC Type) SSDSA2MH160G2K5
SATA DOM	534002150400	APACER	2GB SATA DOM(SLC Type) 7P/270D AP-SDM002G8LASS-J
SATA DOM	534004150400	APACER	4GB SATA DOM(SLC Type) 7P/270D AP-SDM004G8LADS-KS
SATA DOM	534008150400	APACER	8GB SATA DOM(SLC Type) 7P/270D AP-SDM008G8LASS-KT
3G / GPS	573000011090	Gobi2000	HSPA/UMTS –800/850/900/1900/2100MHz Quad-band EDGE/GPRS/GSM –850/900/1800/1900MHz Dual-band EV-DO/CDMA –800/1900MHz

			GPS is Standalone, gpsOne XTRA assistance for enhanced standalone GPS performance, MS-based assisted (support varies based on network carrier)
WiFi /BT	570802090040	QCOM	Ralink(RT3090BC4) 1X1 802.11n, Wireless Lan and CSR Bluecore4 Bluetooth2.1+EDR (Microsoft in-box driver, profiles;Motorola profiles) / software upgradable to BT3.0+HS(Motorola) Combo Mini Card
WiFi	570802010062	QCOM	Ralink 802.11b/g/N, 2T2R,(DSS-3000) Mini PCIe
Battery Kits	221401280000	SINTRONES	Neosonic-Polymer 800mAH 3S1P Battery kit for VBOX-3000
OS	972009720000	Microsoft	Windows Embedded Standard 2009 (Windows XP Embedded)
OS	970022730000	Microsoft	Windows® 7 Professional for Embedded Systems x32/x64 (1-2 CPU) (ESD)